ISSN (print) 0093-4666 © 2012. Mycotaxon, Ltd. ISSN (online) 2154-8889

MYCOTAXON

http://dx.doi.org/10.5248/121.285

Volume 121, pp. 285–289 *July–September 2012*

A new species of *Inonotus* (*Basidiomycotina*, *Hymenochaetales*) from tropical Yunnan, China

Hai-Jiao Li & Shuang-Hui He*

Institute of Microbiology, P.O. Box 61, Beijing Forestry University, Beijing 100083, China
* Correspondence to: *heshh1981@yahoo.cn*

Abstract — *Inonotus puerensis* sp. nov. is reported from tropical China. It is characterized by having a perennial habit, duplex context, a monomitic hyphal structure, presence of both hyphoid setae and hymenial setae, and coloured basidiospores. Detailed descriptions with illustration are provided for the new species, and its relationships with similar species are discussed.

Key words — *Hymenochaetaceae*, taxonomy, white rot, wood-inhabiting fungi

Introduction

Yunnan Province is located in southwestern China and very rich in fungal diversity because of its abundant and diverse vegetation. Although around 300 wood-inhabiting fungi have been recorded in this area (Dai 2011, 2012), including several recently published new polypore species (Wei et al. 2006; Yuan & Dai 2008; Cui et al. 2009, 2011; Dai & Korhonen 2009; Dai & Yuan 2009; Dai 2010), many taxa are still undescribed, especially the tropical species. In 2011 we surveyed wood-inhabiting fungi in tropical Yunnan and collected an unknown species of *Inonotus* P. Karst. The species has a perennial habit, duplex context, a monomitic hyphal structure, both hyphoid setae and hymenial setae, and coloured basidiospores. Since Ryvarden's (2005) monograph on *Inonotus* was published, more new species have been described (Balezi & Decock 2009; Dai 2010; Wu et al. 2012). After checking all existing names, we found none matching all the above characters. Therefore, we propose here a new species, *Inonotus puerensis*.

Materials & methods

Voucher specimens are deposited in the herbarium of Beijing Forestry University (BJFC). The specimens were examined microscopically according to Cui et al. (2011). Abbreviations include: IKI = Melzer's reagent, KOH = 5% potassium hydroxide,

CB = Cotton Blue, IKI– = inamyloid and nondextrinoid, CB– = acyanophilous, L = mean spore length (arithmetical average of all spores), W = mean spore width (arithmetical average of all spores), Q = variation in the L/W ratios between the specimens studied (quotient of the mean spore length and the mean spore width of each specimen), n = the number of spores measured from given number of specimens. In spore and seta size ranges, the 5% of the measurements excluded from each end of the range are given in parentheses. Special color terms follow Petersen (1996).

Taxonomy

Inonotus puerensis Hai J. Li & S.H. He, **sp. nov.** Fig. 1

MycoBank MB 564891

Differs from other *Inonotus* species by its perennial habit, duplex context, monomitic hyphal structure, presence of both hyphoid setae and hymenial setae, and coloured basidiospores.

Type: China. Yunnan Province, Pu'er, Caiyanghe Nature Reserve, on fallen angiosperm trunk, 6.VI.2011 Dai 12241 (**holotype**, BJFC).

Etymology: *puerensis* (Lat.): referring to the locality name of Puer, Yunnan Province, China.

Fruitbody: Basidiocarps perennial, pileate, solitary, without odour or taste and hard corky when fresh, becoming woody hard upon drying. Pilei applanate, projecting up to 3 cm long, 4.5 cm wide and 6 mm thick at base. Pileal surface fuscous when dry, velutinate to tomentum, concentrically sulcate and zoned; margin yellowish brown, obtuse. Pore surface cinnamon when fresh, become dark brown when bruised, clay-buff when dry, glancing; sterile margin distinct, yellowish brown, up to 2 mm wide, bearing abundant hyphoid setae (by lens); pores circular to angular, 7–9 per mm; dissepiments thin, entire, matted. Context cinnamon, up to 2 mm thick, woody hard, duplex, with a black zone between upper velutinate or tomentum and lower context; lower context woody hard, up to 1.5 mm thick, upper velutinate or tomentum up to 0.5 mm thick; a thick dark brown line present between context and tubes. Tubes concolorous with pore surface, woody hard, distinctly stratified, up to 4 mm long.

Hyphal structure: Hyphal system monomitic, generative hyphae simple septate, IKI–, CB–; tissue darkening but otherwise unchanged in KOH.

Context: Generative hyphae yellowish to brownish, thick-walled with a wide lumen, more or less straight, unbranched, frequently septate, interwoven, 3.2–4.7 μm in diam.; hyphoid setae prominent, not dominant, dark brown, distinctly thick-walled with a narrow lumen, some parts subsolid, straight, tapering to apex, 240–400 × 10–13 μm; hyphae in the black zone dark brown, distinctly thick-walled with a narrow lumen, dark brown, flexuous, strongly agglutinate, interwoven, 3–4 μm in diam.; hyphae in the tomentum brown, thick-walled with a narrow to wide lumen, agglutinate, interwoven, 3–6 μm in diam.

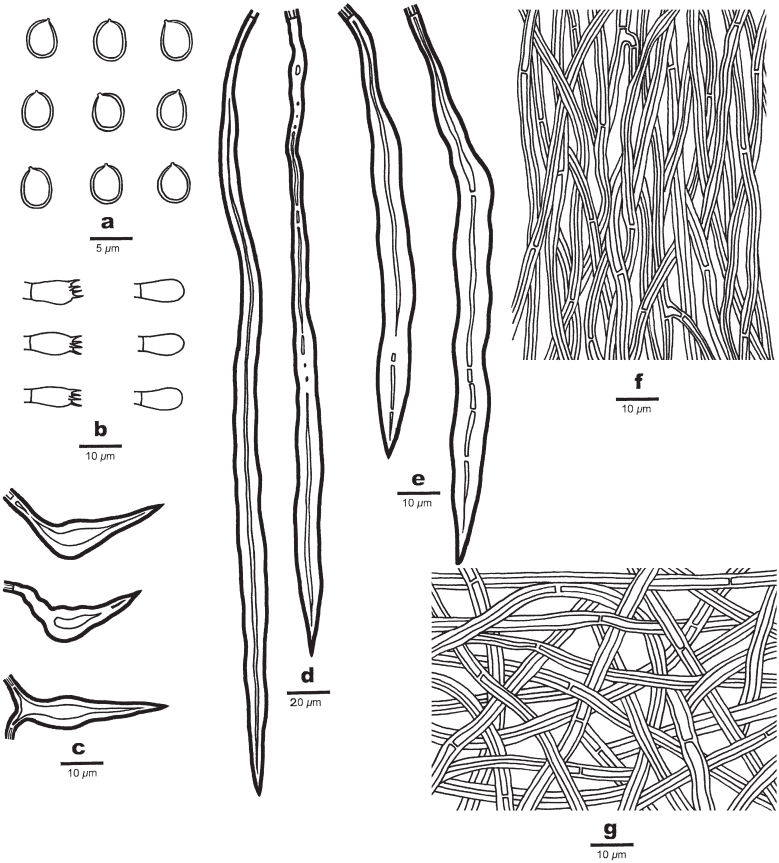

Fig. 1. Microscopic structures of *Inonotus puerensis* (holotype).
a: Basidiospores. b: Basidia and basidioles. c: Hymenial setae. d: Hyphoid setae from context. e: Hyphoid setae from trama. f: Hyphae from trama. g: Hyphae from context.

Tubes: Generative hyphae hyaline to yellowish brown, thin- to thick-walled, rarely branched, frequently septate, straight, subparallel along the tubes, 2.5–3.9 μm in diam; hyphoid setae not dominant, prominent, dark brown, distinctly thick-walled with a narrow lumen, some parts subsolid, straight, tapering to apex, 90–250 × 8–12 μm. Hymenial setae frequent, subulate, tapering to apex, dark brown, thick-walled, 25–42 × 7–11 μm; cystidia and cystidioles absent; basidia barrel-shaped, bearing four sterigmata and a simple septum at the base, 9–11 × 5–6 μm; basidioles in shape similar to basidia, but slightly smaller.

Spores: Basidiospores broadly ellipsoid, yellowish to golden yellow, thick-walled, smooth, IKI–, CB–, (4.4–)4.5–5(–5.2) × (3.6–)3.7–4(–4.2) µm, L = 4.78 µm, W = 3.9 µm, Q = 1.23 (n = 30/1).

Type of rot: White rot.

Remarks: *Inonotus puerensis* is unique in the genus for its perennial habit, duplex context, monomitic hyphal structure, presence of both hyphoid and hymenial setae, and coloured basidiospores.

Macro-morphologically *Inonotus puerensis* resembles members of the *I. baumii* complex by sharing pileate and perennial basidiocarps, abundant hymenial setae, and thick-walled yellowish basidiospores (Dai 2010). However, *I. puerensis* has a monomitic hyphal structure and hyphoid setae, while species in the *I. baumii* complex have a dimitic tramal structure and lack hyphoid setae.

Microscopically *Inonotus puerensis* is similar to *I. indurescens* Y.C. Dai, also described from Yunnan Province (Dai & Zhou 2000). Both have a monomitic hyphal structure, hyphoid setae, and yellowish spores, but *I. indurescens* is an annual species with larger pores (5–7 per mm) and dentate dissepiments. In addition, its hyphoid setae occur in the trama and only sometimes curve and penetrate into hymenium (Dai & Zhou 2000).

Inonotus pseudoglomeratus Ryvarden, described from South America (Ryvarden 2002), resembles *I. puerensis* in pileate basidiocarps, presence of both hyphoid setae and hymenial setae, and coloured basidiospores. However, *I. pseudoglomeratus* is an annual species with larger pores (4–6 per mm), shorter hymenial setae (15–25 × 6–10 µm), and bigger basidiospores (5–6 × 4–4.3 µm, Ryvarden 2002).

Acknowledgments

The authors would like to express their deep thanks to Prof. Yu-Cheng Dai (Institute of Applied Ecology, Chinese Academy of Sciences) and Dr. Xiao-Yong Liu (Institute of Microbiology, Chinese Academy of Sciences) for serving as pre-submission reviewers. This study was supported by the Fundamental Research Funds for the Central Universities (Project No. YX2010-22) and the National Natural Science Foundation of China (Project Nos. 31070022 and 31000006).

Literature cited

Balezi A, Decock C. 2009. *Inonotus rwenzorianus* (*Basidiomycetes*, *Hymenochaetales*): an undescribed species from the Rwenzori Mountain range. Cryptogamie Mycol 30: 225–232.

Cui BK, Dai YC, Bao HY. 2009. Wood-inhabiting fungi in southern China 3. A new species of *Phellinus* (*Hymenochaetales*) from tropical China. Mycotaxon 110: 125–130. http://dx.doi.org/10.5248/110.125

Cui BK, Du P, Dai YC. 2011. Three new species of *Inonotus* (*Basidiomycota*, *Hymenochaetaceae*) from China. Mycol Prog 10: 107–114. http://dx.doi.org/10.1007/s11557-010-0681-6

Dai YC. 2010. *Hymenochaetaceae* (*Basidiomycota*) in China. Fungal Divers 45: 131–343. http://dx.doi.org/10.1007/s13225-010-0066-9

Dai YC. 2011. A revised checklist of corticioid and hydnoid fungi in China for 2010. Mycoscience 52: 69-79. http://dx.doi.org/10.1007/s10267-010-0068-1

Dai YC. 2012. Polypore diversity in China with an annotated checklist of Chinese polypores. Mycoscience 53: 49–80. http://dx.doi.org/10.1007/s10267-011-0134-3

Dai YC, Korhonen K. 2009. *Heterobasidion australe,* a new polypore derived from the *Heterobasidion insulare* complex. Mycoscience 50: 353–356. http://dx.doi.org/10.1007/s10267-009-0491-3

Dai YC, Cui BK, Yuan HS. 2009. *Trichaptum* (*Basidiomycota*, *Hymenochaetales*) from China with a description of three new species. Mycol Prog 8: 281–287. http://dx.doi.org/10.1007/s11557-009-0598-0

Dai YC, Zhou TX. 2000. A new species of *Inonotus* (*Basidiomycotina*) from Yunnan, southern China. Mycotaxon 74: 331–335.

Ryvarden L. 2002. Studies in neotropical polypores 17. New neotropical *Inonotus* species. Synopsis Fungorum 15: 70–80.

Ryvarden L. 2005. The genus *Inonotus*, a synopsis. Synopsis Fungorum 21: 1–149.

Wei YL, Dai YC. 2006. Three new species of *Postia* (*Aphyllophorales*, *Basidiomycota*) from China. Fungal Divers 23: 391–402.

Wu SH, Dai YC, Hattori T, Yu TW, Wang DM, Parmasto E, Chang HY, Shih SY. 2012. Species clarification for the medicinally valuable 'sanghuang' mushroom. Botanical Studies 53: 135–149.

Yuan HS, Dai YC. 2008. Polypores from northern and central Yunnan Province, Southwestern China. Sydowia 60: 147–159.